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LECTURE

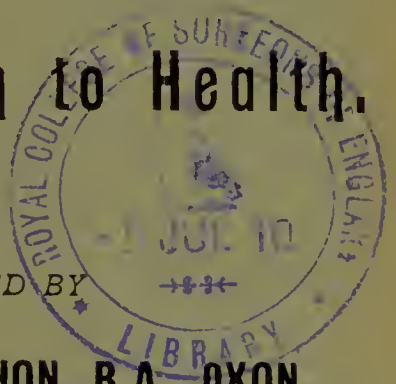
ON

Scientific Voice Production

AND

Breathing Exercises:

Their Relation to Health.



DELIVERED BY

CORTLANDT MACMAHON, B.A., OXON.,

AT

The INSTITUTE OF HYGIENE, Devonshire Street, Harley Street, W., on the 28th APRIL, 1910.

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THE subject of my lecture is "Scientific Voice Production and Breathing Exercises and their Relation to Health," and I am going to endeavour to show you that health, proper breathing, and voice are all three closely connected with each other. One cannot have a voice that is resonant and capable of doing a large amount of work unless the health is good and the breathing apparatus managed as it should be; and if one can succeed in getting a voice that does its work efficiently, then one can be fairly confident that the bodily health is in a satisfactory condition, and one can go still further and say that a really magnificent voice invariably accompanies a splendid condition of health.

One knows, of course, that it is possible to have the most magnificent health and at the same time possess a voice that is weak or very far from being melodious, and therefore one that is very unpleasant to listen to, although this is more or less easily remedied by proper training; but the converse is impossible, and one cannot have a voice that is capable of proper work unless the health is good and the digestion what it ought to be.

This brings me to the questions—What is voice? and What is health? The former is easy of definition, but the definition is tremendously important. It is this. "Voice is air vibrating in the whole of the vocal resonating chambers of the body," and these resonators are all the hollow spaces in the upper part of the body where you put air when you breathe, and consist of the nose, mouth, cavities of the head, the pharynx or throat, the larynx and chest. A definition of health is, shortly, "A state of tone and fitness and of capability to do work, arising from the proper equilibrium of the units of the body," which depend again on proper feeding, drinking, and exercise, especially in the shape of physical and breathing exercises, which enter so largely into scientific voice production.

Having already said that Voice is air vibrating in the resonating chambers of the body, it may not be uninteresting to consider for a few minutes how and where the voice originates. First of all, there are the lungs, into which, of course, as you know, we breathe through the trachea or windpipe, which divides at its lower end into two branches which go into each lung, and these branches divide and subdivide again until every part of the lung is reached by little branches or capillary bronchial tubes which carry air into the tiny air cells, of which there are said to be six hundred millions in the lungs. The lungs occupy the whole of the chest except the space reserved for the heart, and they and the heart are shut off from the abdominal viscera by a sheet-like muscle called the diaphragm, which forms the floor of the chest and is attached to the bottom of the breast-bone, the six lower ribs, and to the spinal column. The upper or thoracic shape of the diaphragm is convex, and in the dome shape underneath it are placed, on the right, the liver, and, on the left, the stomach and spleen, and underneath them the other abdominal viscera.

When air is taken into the lungs the diaphragm contracts and flattens somewhat; when air is expelled the diaphragm ascends once more into its dome shape. This elevation of the diaphragm and the use of the abdominal muscles in raising and supporting it (through their action in contraction on the abdominal viscera) is of very great importance in the method of producing the voice, in what, I believe, is the really scientific and therefore correct way.

I know quite well that a great deal of controversy has taken place about this action of the diaphragm, and the extent of its movement up and down is much questioned, but the fact of its movement whether to the extent of a quarter of an inch or two inches must be borne in mind, because in thinking of it and endeavouring to get the movement, we do get the absolutely correct and uncontradictedly perfect way of expiration, and that is by the firm contraction of the abdominal muscles, which is called by Dr. Hulbert "the abdominal press." What the true extent of the movemen of the diaphragm is, is to us really unimportant in practice; but the great and important thing to bear in mind, is this contraction of the abdominal muscles called, as I say, "the abdominal press," during expiration.

I shall explain it far more fully in a few minutes, and I would impress upon you the importance of it, because without this portion of the process being understood the whole method, from a health point of view and from a voice point of view, loses practically all its force and utility.

I may here say that after a good many years of the study of the voice, the method of producing the voice and the breathing exercises which I teach are to a very large extent those which I have learnt from Dr. H. H. Hulbert, with whom I have had the great privilege of considerable study, and who, in my opinion, and in the opinion, I am sure, of a great many others, has reduced the production of the voice to a perfect science, depending no longer on the idiosyncracy of the individual, but on clearly defined and systematic lines. In my humble opinion, Dr. Hulbert's name will go down to posterity as one of the greatest benefactors to the community at large, in that he has devoted the best years of his life to a subject which brings health and happiness, to practically anyone who cares to seek for them, in the most delightful way possible —that is, through a course of studying for getting music in voice.

To make the most of our lung capacity, breathing and physical exercises must be practised and must be continued with the greatest perseverance, otherwise no really good results can occur.

Whilst practising breathing and physical exercises the breath should always be taken in through the nose and generally expelled with the mouth wide open ; by so doing the soft palate becomes extremely free in its movements and is kept in good condition. As we breathe in through the nose, the soft palate which forms the back portion of the roof of the mouth sinks down towards the tongue and, as we breathe out through the mouth, it is drawn tight up. As the soft palate plays an enormously important part in voice, by directing the vibrating air in proper proportions into the mouth and nasal cavities, the necessity for it being in good condition is apparent. I said just now that the breath should "generally" be expelled from the mouth whilst practising breathing exercises, but it is very important that exercises should also be done with the mouth closed altogether, to ensure nasal breathing being properly performed. Breathing in and out through the mouth only (the nose being entirely neglected) is one of the greatest causes of adenoids ; I know also that mouth breathing is one of the results of adenoids, as also is in many cases the thin, narrow undeveloped chest of the sufferer from them, but I am certain that mouth breathing is far more the cause of adenoids than it is the result of them, and I think that many medical officers of health, whose work takes them largely into the big County Council schools, would be most emphatic in saying that if only children were taught proper nasal breathing, the amount of sickly children would decrease to an enormous extent, and the country saved vast sums every year, which now go in getting back the children's health which often should never have been lost. Chronic laryngitis is one of the commonest results of the failure of the nose to warm, moisten, and filter the inspired air, whether that failure be the result of mechanical obstruction or disease.

Coming back to breathing as a whole, the chest must be most carefully exercised to get the greatest expansion and contraction in all directions, and, in particular, lateral costal breathing must be paid the greatest attention to, to ensure the bases of the lungs being thoroughly developed.

Lateral costal breathing is best learnt by placing the hands on the sides of the chest in a line a little below the bottom of the breast-bone and when breathing in feeling

the sides of the chest swelling out under the hands as far as possible, and, when breathing out, feeling them dropping in as far as possible; the sides of the chest become extremely elastic and responsive to the brain by this exercise, and one must remember always to breathe in and to get expansion, in the way I have described, whether the breath is a large or very small one.

A great many kinds of physical exercises combined with proper breathing can be brought into play to develope the lung capacity, but all exercises must be full of purpose, otherwise they might just as well be left alone. The great thing to aim at is elasticity; any constriction anywhere during vocalisation is absolutely opposed to voice. Hard work with heavy dumb-bells and other apparatus for developing abnomal muscle is dead against a properly-produced voice. The chest must be capable of immediate contraction or expansion at the dictation of the brain, and this is, of course, an impossibility if it is bound up and stiffened with abnormal muscles; always remember the body must be the servant of the mind, and not the mind the servant of the body. The abdominal muscles require a variety of exercises, the most important being those for getting to perfection the "abdominal press" which I have already explained. Trunk-turning and trunk-bending exercises help to get this contraction in the proper manner by the muscles becoming quickly responsive and fully capable of doing their work. The abdominal muscles should never, while breathing in, be relaxed so that the abdomen extends beyond its natural line, as does occur in the absolutely wrong method of breathing called abdominal breathing, which results in the abdominal wall becoming weak and the abdominal viscera let too far down; then too often follows indigestion and the innumerable troubles and ills that accompany it, not to mention a most undesirable figure.

Presume that the lungs have been filled with air right down to their bases, and the sides of the chest gone out to their greatest extent to allow the fullest lung expansion, and the diaphragm has descended and flattened, it is now that the abdominal muscles come into play. When properly trained so to do, they contract strongly and firmly; the lower ribs, which had rotated upwards and outwards

during inspiration, being fixed by their attachment to the diaphragm, are pulled down and in, and so contract the lower part of the chest, the abdominal viscera are necessarily pressed up, and they push up the diaphragm, which again ascends into its dome shape; the internal capacity of the chest is thereby reduced, and the air expelled in such quantities and with such force as the circumstances require. You can easily see how the force of the air going out can be absolutely controlled by the "abdominal press." When the pressure is taken off, the abdomen regains its natural line, we breathe in again, and the whole movement starts afresh, and thus the breathing part of a properly produced voice is brought about; but to get these movements perfect requires the greatest attention and care, and, as I said before, unless they are correctly done the whole method is robbed of practically its entire efficacy.

Having explained to the best of my ability how the breathing should be properly performed, I would like to say a few words on the larynx or voice-box, in which are contained the vocal cords which cause the air passing between them to vibrate when they are approximated for vocalisation, and so begin the phenomenon, Voice. I say "begin" because unless the vibrations were carried into and resounded in the resonating chambers there would be no sound.

I hope it may be interesting to describe very shortly the vocal cords and the muscles and cartilages of the larynx. First of all, let us take the thyroid or shield cartilage, which is V-shaped, and the upper portion of which is easily felt in your throats, and is commonly known as "Adam's apple."

By placing the hands together in a V-shape with the palms facing each other, with the thumbs standing up, the shape of it is roughly shown; the thumbs represent the superior cornua or horns, and, keeping the same idea, with the hands turned with their backs to each other so that the thumbs are underneath, we get a rough view of it showing the lower cornua or horns.

The thyroid has two sides but no back of its own: I will describe in a moment what makes a back for it.

Underneath this cartilage is another cartilage called the cricoid cartilage; this forms the top of the windpipe and

gets its name from the Greek word *krikos*, meaning a "signet ring." It is small and round in front, but at the back it broadens up in a way that suggests the signet portion of a signet ring. The signet portion forms part of a back for the thyroid cartilage, and, on this broader signet portion of the cricoid, rest two other cartilages called the arytenoid cartilages which complete the back for the thyroid cartilage. The thyroid is attached to the cricoid by muscles called the crico-thyroid muscles, and the thyroid works on a joint with the cricoid, the joint being situated just where the lower cornu or horn of the thyroid descends. In front, between the bottom of the thyroid cartilage and the cricoid, is a space which varies in depth as the cricoid rises in front towards the thyroid during vocalisation; this space is filled by the crico-thyroid membrane. This same membrane continues backwards on the cricoid's edge, and extends upwards, as the crico-thyroid membrane, to the vocal cords. The vocal cords themselves are formed of two bands of elastic tissue covered over with mucous membrane, into which delicate muscular fibres are inserted from a muscle called the thyro-arytenoid muscle. The vocal cords are attached to the angle of the thyroid cartilage in front and to the arytenoid cartilages at the back. The thyro-arytenoid muscle (which I mentioned a moment ago) supports the vocal cords all along, and is fixed to the thyroid cartilage and is inserted into the arytenoid cartilages. This thyro-arytenoid muscle performs a great many functions and it works in two portions, but the action of the muscle as a whole results in the cords being adjusted, elasticity modified, and the production of a suitable enlargement or contraction of the edge of the vibrating cords. This muscle is to the vocal cords what the finer adjustment of a microscope is to that instrument.

The arytenoid cartilages, which, as I have said already, rest upon the signet part of the cricoid cartilage, are pyramidal in shape and triangular at their bases, and on to the front angle which is called "the vocal process," the vocal cords are attached. The arytenoids rotate on their own bases, and glide towards each other (on their articulations with, or, in other words, where they rest on the cricoid cartilage), when a muscle called the transverse arytenoid muscle, which is attached to them both, contracts. The

effect of this movement of the cartilages towards each other is to close that part of the opening or chink between the cords called the glottis, which lies between the bases of the arytenoid cartilages, called the cartilaginous glottis. The arytenoids have their vocal processes—which, as I said, are the front angles—separated by a muscle called the posterior crico-arytenoid, and the muscle that brings them together is called the lateral crico-arytenoid muscle. Both these muscles are attached to the outer angle of the arytenoids, called "the muscular process." The vocal cords of course are separated or approximated according to the movements of the arytenoid cartilages. The lateral crico-arytenoid muscles are called the adductor muscles, in that they bring the cords together.

The other muscle that is of great importance is the crico-thyroid muscle, which, as its name denotes, is attached to the cricoid and thyroid cartilages. It is attached to the ring of the cricoid towards the front, and slants round towards the side. It is divided into two parts: the lower part continues along the cricoid and is attached to the inferior horn of the thyroid; the upper part is attached to the edge of the thyroid in about its centre. When this muscle contracts for vocalisation, the cricoid is drawn up in front towards the thyroid, the little space between them in front (which I mentioned earlier in my lecture) gets smaller and almost disappears as the cartilages approach each other; the signet or broad part of the cartilage on which rest the arytenoids (to which, again, the cords are attached) describes an arc backwards on its joints with the thyroid, of course the arytenoids go back with it and the cords are accordingly stretched. The function of these muscles being to tighten the cords, they are called the tensor muscles; and they are to the vocal cords what the coarser adjustment is to the microscope. To sum it up shortly then: the vocal cords are attached to the angle of the thyroid in front and to the arytenoids behind; the slit between the cords is called the glottis; the strong crico-thyroid muscles (called the tensors) tighten the cords; the lateral crico-arytenoids, called the adductors, bring them together; the posterior crico-arytenoids throw them apart; and the thyro-arytenoid muscle makes the delicate adjustment of the edges of the cords, and makes

them thicker or thinner, and the glottis larger or smaller, as the exigencies of pitch require.

I have now described as well as I can how the breath is taken into the lungs and how it should be expelled by the contraction of the abdominal muscles, which we call "the abdominal press," and I have described the vocal cords and their environment. I now come to the time when we want to vocalise either for song or speech. The involuntary muscles of the larynx get to work and the cords are approximated, adjusted, and tightened. They, of their own accord, get the right approximation and tautness for any particular note we want, and vary the pitch as required by the brain and ear. To think of all the wonderful mechanism at work when one is listening to a great singer or speaker, and the marvellous co-ordination of the various factors producing the notes that appeal so strongly to us, is to me one of the most interesting and fascinating studies in the world.

The action of the air as it is expelled from the lungs striking the cords and setting them in vibration is called the *coup de glotte* or "shock of the glottis." You no doubt have heard a great deal about this shock of the glottis. It is a subject which has been talked about a good deal. What the *coup de glotte* really is, is the stimulus of the breath on the cords which make them vibrate. The *coup de glotte* can be as gentle as a zephyr or delivered like a great blast. This stimulus or *coup de glotte* must be most carefully brought about. To train a voice in the early stages on a sound like "ah," and with a strong blast of air, will very likely utterly ruin the voice unless the cords are abnormally elastic. One *must* use the sound "ah" in training a voice, but it should only be one of many other sounds, and not specialised upon, and very great care should be taken when using this sound to begin it very gently, otherwise the air will strike the cords with a hard bang and strain them far more than is proper. The reason for this is as follows:—"Ah" is produced with the mouth at its widest, and there is very little control at the lips of the air carrying the vibrations on it. Everything is very free and loose (through the shaping of the mouth for the sound), and the throat perfectly open, the blast is coming up unchecked and the cords are without

that downward pressure on them which they get when a sound like "oo" is being made, during which sound the air, being compressed by the lips, counteracts the upward press of the ascending air column by pressure from above, and so the cords are not unduly strained. In "ah" there is nothing of the kind, and they receive a sharp blast which makes a pressure all underneath. The end of a voice for singing purposes improperly trained on "ah" in its early stages is that the cords through being continually suddenly burst open become overstretched and lose their elasticity, rub against each other in the centre, and thus become sort of knock-kneed. Nodes form on the cords through attrition, and then "good-bye" to voice for all musical purposes, unless the surgeon's skill can remedy matters. As the singer advances and can sing with skill and intelligence, the "ah" sound becomes most valuable. It makes the throat free and open and the voice beautifully flexible. It is the use of it as the chief sound for training on in the early stages, that is wrong.

The *coup de glotte*, then, is merely the stimulus that sets the cords in vibration; whether the stimulus is a gentle one or a powerful one, it is still the *coup de glotte*, and is not (as is often thought) invariably a violent striking of the cords.

What are the sounds on which the voice should be trained? First comes the "M" sound, and then follow the six Italian vowel sounds—"oo, oh, aw, ah, a, and e." The "M" sound is of enormous importance. It is *the* sound for getting resonance in the voice, and especially nasal resonance, without which a voice is worth nothing. It carries vibrations everywhere, and is a sound that no one can neglect. It has also the very valuable property of restoring the injured mucous lining of the throat. To make this sound to one's self before singing at a concert or making a speech makes the throat ready and warmed up for its work. If, instead of people going through the process of clearing their throats before vocalising, they would make use of the "M" sound for a short time, they would be agreeably surprised at the great advantage the latter process has over the former.

The fundamental vowel sound is the "oo" sound. It originates furthest back in the throat (the larynx being

during this sound nearest to the entrance to the nasal cavities), and it is brought furthest forward on the lips: therefore I say it should be the fundamental sound to train on. Then comes the "oh" sound, with the lips not so far forward but the mouth a little wider open; then the "aw" sound, with the mouth again wider; then the "ah," with the mouth widest of all; the "a" sound next closes the mouth very considerably, and the "e" sound closes it still more. You notice the mouth opens wider each time as one goes up from "oo" to "ah," *i.e*, "oo," "oh," "aw," "ah," and shuts for "a" and "e." You notice also there is no "i," as that is a diphthong composed of "ah" and "e." All these vowel sounds have their shape; and a person when trained looks for their sound in a word (especially, of course, in singing), and shapes accordingly. They are relieved of all anxiety as to how the mouth shall be put for any particular sound; they know at once and get the best possible result by giving it its right shape. When the vowel sounds are produced as perfectly as possible, the voice becomes enormously enriched by over-tones and harmonics, which are added to it as they occur in the vocal resonators. The purer the tone the more the over-tones in it. The important question is, how can these vowel sounds be produced to the greatest advantage? I will tell you. Between the lips and the tip of the tongue and the abdomen there must be absolute freedom. We can control the lips and the tip of the tongue, but everything else must be absolutely free. There must be the idea of lifting, as it were, the voice straight from the abdomen right into the lips. If we attempt to interfere during vocalisation with the larynx, the back of the tongue, or to raise the soft palate, or think of anything between the lips, tip of tongue, and the abdomen, you may be quite certain that you will constrict somewhere, the vibrating air will be checked, and therefore the voice will suffer in accordance with the amount of constriction.

I want to make a few more remarks about the vowel sounds. I have pointed out the great danger of training on the "ah" sound too much in the early stages. We must train on it, of course, but until the "abdominal press" is absolutely understood, one had much better introduce this sound with some innocuous sound which will have the

cords vibrating before the "ah" sound is made use of. The "M" sound does it beautifully, and one can (having got the "ah" sound through the "M," and the cords in vibration) continue the "ah" alone up a scale, or on whatever exercise you like. Or you can put "oo" in front (and introduce it like that) during practice. It is an excellent thing to put "oo" in front, as it is the "W" sound, *e.g.*, *when*, *why*, *who*, *woe*.

The same objection applies nearly as strongly to "aw" as to "ah," but in a less degree, and in the early stages of training a voice it also should be introduced by an innocuous sound, unless the teacher takes the greatest possible care that it is commenced very gently, so that the sudden bursting open of the cords is avoided, and the more perfect the working of the "abdominal press" the less likelihood is there of a too violent *coup de glotte* or stimulus to the cords.

I have said that between the abdomen and the lips there must be perfect freedom. The lips exercise the first control on the vibrating air. As there is a pressure upwards from the contraction of the abdominal muscles and a control at the lips, you will see that the air is thereby compressed in proportion to the control on the lips and the pressure caused by the abdominal muscles. The shape at the lips, therefore, is of enormous importance in the production of voice, because they control and allow the vibrations to escape in proper quantities. The shaping at the lips concentrates the vibrations in varying degrees. This lip control does not apply to the very high notes; in them, control has left the lips and the voice is transferred to the region of the naso-pharynx, and the higher vibrations take the place of concentration of vibrations in getting telling effects. If you want to see lip control and the "abdominal press" to perfection, watch a lion at the Zoological Gardens, and you will see that whenever he makes a sound he makes use of the contraction of the abdominal muscles, and controls most beautifully with the lips; this will show you in the clearest way possible the importance of both lip control and "abdominal press." No one could accuse a lion's voice of lacking in vibration!

By all means practise when not vocalising, in any way you like, to get the tongue to lie correctly—force it far out

and draw it back as far as possible, force it against the lower teeth and make it roll upwards, and exercise the muscles of the neck and the extrinsic muscles of the larynx continually. A good exercise for this is to take the pillows away from under one's head before getting out of bed, and then to raise the head so that the chin comes forward on to the chest. A daily practice of this is invaluable to singers. In the same way, move the jaw in every direction to make it easy in its movement; do anything you like to get the muscles in good working order, but when you are actually vocalising forget the actions of the muscles and do not interfere with them, otherwise the voice will suffer. Think only of the lips, tip of tongue, and "abdominal press." In time they will work correctly without our being conscious of their movement.

By the vowel shapes being correctly made and the breathing performed in the way I have described, the voice is brought well forward on to the lips.

The great advantage of bringing the voice forward (and everything being absolutely unconstricted) is, that the throat and soft palate escape being struck by the vibrating column of air which passes by them, instead of being checked on them. In addition to vibrations passing direct into the nasal cavities on the ascending air column directed into them, vibrations are also immediately transferred there from the mouth through the hard palate. If, however, you constrict the throat or soft palate, the vibrations strike against them, and the surface being soft the vibrations are killed (as when one sings against a curtain), and the voice suffers enormously in volume. In his attempt to get more sound, the untrained speaker or singer forces the air up in larger quantities and gets a temporary increase of indifferent sound by friction on the throat. Next day he finds his voice difficult to produce, his throat sore, and the muscles at the base of the tongue aching. A continuation of similar voice production, and he is on the way to getting laryngitis or inflammation of the vocal cords, resulting in partial or complete loss of voice.

I have not, so far, differentiated between the singing and the speaking voice. There should be practically no difference in the method of producing both. The vowel sounds are necessarily made more of in song than in speech,

but the more correctly we produce the vowel sounds in speech, the better and more musical is the voice.

When the speaking voice is to be trained it must be through the singing voice. All the shapes for lips and tongue and method of breathing should be taught on the singing voice, and, when that voice becomes good, then it should be lifted into the speaking voice. This ensures the great thing of all, that is, music in voice. When your speaking voice is really musical, then you know it is being properly produced. Think what that means to the person to whom their voice is everything. Without it their means of livelihood are gone, and, even when there are remote symptoms of voice trouble, imagine the fearful anxiety it is to them to think that, should anything happen to their voice, their means of living will in all probability be taken away from them. This danger is one that can be averted by having the voice trained in such a way that these symptoms never need occur, and the voice that is impregnable to the ills that arise from misuse is the voice that has real music in, and because it is being properly produced, harmonics and over-tones supplement it; the vocal cords vibrate perfectly through the air pressure being scientifically applied, and the resulting voice carries, even when produced quite gently, through a large room on account of its many and concentrated vibrations. Consider, then, what a voice really produced with music in means to anyone, but above all to those who have to use their voices for many hours daily. Voice troubles are most prevalent, I should say, among teachers in schools, and I think that all should have the opportunity of going through a course of training for voice, and so being assured of being able to carry on their profession relieved of all anxiety from a voice point of view.

Now as to breathing exercises. I have mentioned the particular one for developing the bases of the lungs, and where the hands should be placed. The many physical exercises with which a great many of you, I expect, are perfectly familiar are all excellent when combined with correct breathing, but the breathing is of the greatest importance. In so many exercises the breath is let out far too soon, and the whole effect, from a voice and health point of view, lost. An instance is the hands meeting in

front and then flung backwards with a jerk as the breath is expelled, or the hands being above the head and the breath expelled as they are dropped to the shoulder. I consider this is absolutely wrong. The breath should be held, and, when the second position is acquired, gently expired.

Another matter that is very much overlooked is the poise of the body, and in getting it correctly breathing exercises can be very usefully combined. To get body balance, I commence by raising the body on to the toes, breathing in and feeling the sides of the chest go out as I ascend, and breathing out when the heels touch the ground. The breathing can be done through the nose all the time through one or both nostrils, or in through the nose, and out through the mouth.

I then do bending of the knees, breathing in as I descend and breathing out as I regain the upright position, also in through nose and out through mouth or nose.

Then bending forward at hips, same breathing as before.

Then breathing in and letting head go back, then raising the chest, then head brought forward again, and breathing out as before.

The body should never lean backwards and the head should be carefully poised, and care taken that the body balance is perfect without stiffness. There should be a feeling of preparedness for quick movement, as if one were going to start to run, or as one is in a game of tennis. This allows complete elasticity and responsiveness of the organs used in song or speech. Placing a hand on the abdomen and another on the upper part of the chest during singing exercises enables a teacher in a class to see that the "abdominal press" is being applied and the voice supported by it.

For stammerers and those suffering from other impediments of speech, this beautiful state of elasticity and bodily fitness ensuring strong contraction of the abdominal muscles for use in voice, the force of the air expelled from the lungs being applied in such a way that it will drive past most of the obstacles raised by nervous action, where a feeble expiration would be checked, and the perfect shaping of the lips for vowel sounds and knowledge of where the tip of the tongue should be for vowels and consonants, and the command over the emotions that should

result from studying this method of producing the voice, afford the greatest chance of a complete cure, provided there is no physical cause for their trouble. I should like to say a lot more about stammering, but it is outside the subject of my lecture to-day; I only say that in this method of producing the voice I know success lies.

Some of the results, then, of this method of producing the voice (which can be acquired easily and gradually without any cessation from work, the right method by degrees overcoming the wrong) are whole lung-breathing resulting in proper oxygenation of the blood, a voice that will do its work efficiently, a proper carriage of the body. Weak and anæmic people improve rapidly in health as a result of the breathing exercises, which go to enrich the blood. Sufferers from adenoids need have no fear of a return of their trouble after operation, as the post-nasal space has currents of clean fresh air passing over it, which will keep the mucous membrane in a fresh and healthy condition and so prevent a fresh growth. And, as I have pointed out, if the nasal breathing exercises were taught to little children, they would in all probability escape this all too prevalent complaint.

We all should breathe through the nose whenever possible except during vocalisation, when, to get sufficient air into our lungs, we must inspire also through the mouth. But, if we value our health, we should keep our mouths shut, whenever possible, and breathe through the nose, as in the nose the air becomes purified and warmed before passing down into our lungs. On the two lower turbinated bones in the nose, in passing over which the air is warmed, are thousands of tiny cilia or minute hairs which have a wave-like movement from behind to the front. These little hairs arrest impurities, and, by the gentle wave-like movement which I mentioned, they push them out, passing them on from back to front, and so save our throats, vocal cords, and lungs from injury.

All voice users who will study this method will find that the voice becomes much more flexible and easy of production. When raised to enforce a point or to emphasise a statement, it will get its additional power by proper resonance and freedom, instead of by constriction and friction, and will therefore remain musical instead of

becoming harsh and disagreeable as so many voices, which are pleasant in their normal tones, become when raised above their ordinary pitch.

By bringing the voice well forward to the lips, it becomes a telling vehicle for the passions. Love, hatred, scorn, and pity are accentuated thereby. Fire and passion in speech or song can only be really finely exemplified when the voice is right forward on the lips.

If this method of producing the voice and the breathing exercises it entails were practised every day in the schools of England as a preliminary to the day's work, I believe that many excellent results would follow. The English language would be spoken properly and the Cockney accent disappear by the vowel sounds being correctly shaped for and produced. The national physique would be enormously improved, and that most terrible disease, tuberculosis of the lungs, which is so frightfully prevalent, would be prevented to a degree that one cannot calculate. Tuberculous lungs get better under a treatment of open air and breathing exercises, and often the disease is absolutely checked. Cannot one say, then, with confidence, that this terrible disease would be robbed of many thousands of its victims if our little children were given such daily instruction by properly qualified teachers as would make them in such a state of physical fitness that they would not succumb to this national enemy that destroys so many young lives which never had a chance of putting up a fight against it until they were already in its grip ?

In conclusion, I would like to say that tone in voice is the musical result of the perfect working of the vocal machinery, and all real tone depends on the proper use of the "abdominal press," combined with lateral costal breathing. Remember that a good voice is the best and most refined outcome of perfect physical movement—being musical it will stand any amount of work. Both in speaking and singing good results depend very largely on the proper pronunciation of the vowel sounds. The Italians vocalise beautifully because they shape properly for the big vowel sounds. Italianise English, and the voice is immediately enriched. If you properly control your vowels and your consonants at the lips, the voice will carry over a large space beautifully clearly; but the consonants, more

especially the final ones, must be hit hard on the lips. Pronunciation is the basis of successful speaking; meaning and sentiment must then be sought for.

Learn how to sing and speak and to develope the lungs in the way I have tried to put before you; a good voice and good health will follow. Remember elasticity is everything—not strength, skill, not muscularity. The lungs depend on an elastic chest. Digestion on an elastic abdomen. Intelligence on an elastic brain.

13 Winhole Street

~~25 Welbeck Street~~, W.

Printed by W. A. Symcox, Dulwich Village, S.E.